MULTIPLE BENEFIT UNDERGROUND STORAGE FACILITIES

I. INTRODUCTION

Applicants for Underground Storage Facility (USF) permits occasionally seek to incorporate uses aside from recharge at a facility. These uses may include recreational, educational, environmental, scenic and other components. The Department recognizes that these benefits can sometimes provide additional incentive for the creation of a USF or can provide important community benefits above and beyond meeting water storage needs. Consequently, ADWR is supportive of USFs with multiple benefits; however, the Department must also be cognizant of its responsibility, established in A.R.S. § 45-815.01, to ensure that these facilities are designed and utilized responsibly to meet water management objectives and to prevent the USF program from improper use to permit new lakes that would be otherwise prohibited under "the Lakes Bill" (A.R.S. § 45-132) or to avoid conservation requirements established in the management plans. This paper is intended to describe how multiple benefit recharge facilities may meet the qualifications for a USF permit.

II. CONSTRUCTED UNDERGROUND STORAGE FACILITIES

The Underground Water Storage, Savings and Replenishment statutes provide that, to be permitted as a constructed USF, the "body of water" must have been "designed, constructed or altered so that water storage is a principal purpose of the body of water." A.R.S. § 45-815.01[1]. There is no clear line between those facilities that qualify as a constructed USF and those that do not when multiple benefits are being proposed. A purely recreational or scenic lake that consists merely of irregularly shaped basins with no features or maintenance intended to enhance the underground water storage of the facility would not be permitted as a constructed USF. A "lake" that combines scenic use with features and/or a maintenance schedule that are typically included in constructed USF designs and operations could be permitted as a USF, but only if the storage is a principal purpose. The ultimate question is whether the proposed facility contains sufficient components and maintenance activities commonly used in constructed USF projects so as to evidence the intent to store water efficiently.

Thus, in order to determine whether a "body of water" meets the requirements to be permitted as a constructed USF, the Department examines the proposed facility to determine if it has the characteristics of a storage facility. As is explained below, the facility must be designed and managed to

[1] A.R.S. § 45-815.01provides:
The following shall not be permitted as underground storage facilities:
1.A body of water, as defined by A.R.S. § 45-131, unless it has been designed, constructed or altered so that water storage is a principal purpose of the body of water.
2.Aqueducts, irrigation canals and other man-made water conveyance systems.
3.Water that incidentally recharges an aquifer during the course of its use for agricultural, municipal, mining or industrial purposes.

add water to an aquifer, and must be maintained so as to ensure a reasonable recharge efficiency is maintained. A project obviously intended to be used for landscape, scenic or recreational uses, where the recharge is merely a secondary byproduct of the project, will not be permitted as a constructed USF.

A. Terminology of A.R.S. § 45-815.01

The following sections explain the components of A.R.S. § 45-815.01 as they relate to a determination for a constructed USF permit.

1. Body of water

A.R.S. § 45-131 states that "body of water" means a body of water in an active management area established under chapter 2 of this title (Section 45-401 et seq.), including a lake, pond, lagoon or swimming pool, that has a surface area greater than 12,320 square feet and that is filled or refilled for landscape, scenic or recreational purposes.

2. Designed, constructed or altered

To be permitted as a USF, a facility must achieve the purpose of adding water to an aquifer. Reasonable reductions in infiltration rates over time are expected with most types of recharge facilities. However, maintenance practices are intended to minimize these reductions and are required in all constructed USF permits. Typical basin maintenance activities include wet-dry cycling and/or mechanical manipulation of the basin surface. The type and frequency of maintenance must be reported on an annual basis as a condition of all constructed USF permits.

Potential for clogging varies with facility design, source water quality and site conditions. The maintenance plan for the facility shall include a demonstration that access to the basins for maintenance equipment is feasible. If vegetation is to be included in the project, the plan shall include a demonstration that the plant material will not interfere with maintenance.

The Department recognizes that a "reasonable" infiltration rate is best determined by site conditions and the recharge technology being used; however, a recharge project has not been properly designed, constructed or altered for water storage if estimated infiltration rates are unreasonably low. The determination for this criterion is made through an examination of the hydrogeology of the site, which must show that conditions are adequate to allow the infiltration of the source water at a reasonable rate. Furthermore, regular monitoring of the facility is required to measure infiltration rates over the duration of the permit.

3. Principal purpose

In order for a body of water to be permitted as a constructed USF, recharge must be a principal purpose of the facility. That is, recharge must be one of the reasons for the operation of the facility. Recharge cannot be a secondary effect of the operation of the facility for another purpose. An example of recharge as a secondary effect is a recreational lake that is not maintained to prevent clogging. In this case, unless the applicant demonstrates that clogging would not diminish infiltration rates, the Department would interpret the lack of maintenance as the applicant's desire to limit infiltration.

Therefore, recharge would be secondary to the operation of the recreational lake and a constructed USF permit would not be granted.

Other features can be incorporated into a constructed USF project that are compatible with recharge being a principal purpose. Applicants have established and maintained riparian habitat and wildlife areas in USF projects where recharge is a principal purpose. Facility operators must account for all evapotranspiration losses associated with any additional components incorporated into the recharge project in their annual reports and must explain in the application what effect the activities are anticipated to have on water storage.

4. Conveyance channels

Aqueducts, irrigation canals and other man-made conveyance systems are statutorily prohibited from being permitted as USFs. A.R.S. § 45-815.01.

5. Incidental recharge

Water that incidentally recharges may not be permitted as a USF. Incidental, or unintentional, recharge of water includes water that recharges an aquifer during the course of its use for agricultural, municipal, mining or industrial purposes. For instance, if a constructed wetland is established for the treatment of wastewater under A.A.C. R18-9-D307 (tertiary treatment wetlands), which requires that seepage be limited by installation of a liner, the recharge of any seepage is incidental to the treatment of the wastewater and it would not be permitted as a USF. Likewise, the over-application of water to an agricultural crop such that significant amounts of the water seep back into the aquifer shall not be permitted as a USF.

B. Examples

This section is intended to illustrate some of the types of projects that have been accepted or rejected by ADWR as USFs. Recharge is inherently site and project specific and these examples are not meant to discourage applicants from pursuing projects with somewhat similar features. Potential applicants are encouraged to meet with staff to discuss the character of projects and whether they may qualify as recharge facilities.

1. Lakes

The Picacho Reservoir and Lake Project in Pinal County is an example of a proposed constructed USF that did not meet the standards of A.R.S. § 45-815.01. Because the lake proposal lacked significant design and operational features of a recharge project, such as wet-dry cycles and/or lake level fluctuations to allow for scraping, the Department advised that the proposal did not appear to meet the requirements of A.R.S. § 45-815.01.

2. Riparian Restoration

The Gilbert Riparian Preserve is a constructed USF that incorporates riparian vegetation and wildlife habitat. In order to incorporate maintenance activities into the project, design elements were included that would allow plants and wildlife to be protected. These elements included islands of vegetation

within the basins, as well as vegetation around the perimeter of the basins, and deep pools to sustain fish during periodic dry cycles. Increased evapotranspiration is taken into account during annual reporting and credit calculations. This project successfully demonstrates that habitat creation and riparian restoration can be incorporated into a constructed USF. This project also includes significant recreational and educational components.

III. MANAGED UNDERGROUND STORAGE FACILITIES

Multiple-benefit managed projects are governed by the definition of a managed USF as set forth in A.R.S. § 45-802.01(12)[2]. Any facility that meets this definition may be permitted as a USF, regardless of additional features that may be added to enhance the site. Furthermore, the Department recognizes that all managed USFs are multiple benefit projects due to riparian vegetation and wildlife habitat that is supported by flows in the facility.

For all managed USFs, evapotranspiration resulting from streamside vegetation must be calculated and deducted from the water discharged to the stream when determining long-term storage credits. Similarly, storm flow, which is naturally present in the stream channel and is not a permitted source water for recharge, must also be deducted when calculating long-term storage credits.

[2] A.R.S. § 45-801.01(12) states that "Managed underground storage facility" means a facility that meets the requirements of A.R.S. § 45-811.01 and that is designed and managed to utilize the natural channel of a stream to store water underground pursuant to permits issued under this chapter through artificial and controlled releases of water other than surface water naturally present in the stream. Surface water flowing in its natural channel is not a managed underground storage facility.